



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,844	10/19/2001	Adam Michael Baumberg	1263.2067	8582
5514	7590	10/20/2005	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			LAROSE, COLIN M	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	

2627

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,844

Applicant(s)

BAUMBERG, ADAM MICHAEL

Examiner

Colin M. LaRose

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 36-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 8, 12-16, 19-21, 25, 26, 30-32 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 4-6, 9-11, 17, 18, 22-24, 27-29 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/11/04 1/12/05 12/17/04 6/11/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-33 and 36-40) in the reply filed on 22 March 2005 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 32 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 32 is improperly written in multiple dependencies. Claim 36 depends from claim

32.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2623

5. Claims 1-3, 7, 8, 12-16, 19-21, 25, 26, 30-32, and 36-39 are rejected under 35

U.S.C. 102(e) as being anticipated by U.S. Patent 6,434,265 by Xiong et al. ("Xiong").

Regarding claims 1 and 19, Xiong discloses a method/apparatus (figures 2 and 3) of generating frequency component image data representative of image information of a plurality of different spatial frequencies of an image of at least part of a subject from a predefined view (e.g. multiple images of a subject, a house, are taken from different vantages (figure 1a), and the images are aligned and blended so that they conform to a predefined view of the house (figure 1b)), the method comprising steps of:

receiving a plurality of images comprising image data representative of a subject from a plurality of view points (312, figure 3);

for each of said plurality of received images, determining frequency component image data representative of image information of a plurality of different spatial frequencies within said received images (316 & 322, figure 3: for each image, a Gaussian pyramid is constructed and traversed, beginning with the coarsest level of the pyramid – each level of the pyramid represents a different spatial frequency) and determining projections of said frequency component image data projected to said predefined view (318, figure 3: for each level of the Gaussian pyramid, a projective registration matrix is updated – the projective registration matrix defines the projection of two current overlapping images with respect to each other on the predefined view); and

for each of said plurality of different spatial frequencies, utilising said projections of frequency component image data to generate frequency component image data representative of spatial frequency information of an image of at least part of said subject from said predefined

Art Unit: 2623

view (320, figure 3: the projections calculated in block 318 are used to calculate a minimal error function at block 320, which error is propagated up to the next higher level of the Gaussian pyramid; the process is iterated until the top of the pyramid is achieved – therefore, for each spatial frequency level of the Gaussian pyramid, the projection matrix is used to generate frequency image data at the next level of the pyramid (the image data including at least a part of the subject for the predefined view)).

Regarding claims 2 and 20, Xiong discloses the determination of frequency component image data representative of a lower spatial frequency is determined by performing a blurring and sub-sampling operation utilizing said received image data (i.e. a Gaussian pyramid is constructed via downsampling and blurring the image data repeatedly).

Regarding claim 3 and 21, Xiong discloses the determination of frequency component image data representative of a higher frequency is determined by performing a differencing operation utilising said lower frequency component image data and said received image data (e.g. higher frequency levels contained in a Laplacian pyramid in the blending step of figure 5 are generated from a difference between the image data and the blurred image data).

Regarding claims 7 and 25, Xiong discloses said generation of frequency component image data comprises for each spatial frequency for which frequency component image data is to be generated the step of:

utilising each portion of said projections of frequency component image data to determine frequency component image data representative of spatial frequency information of said spatial frequency for corresponding portions of said image (i.e. the pairwise projective

matrix calculated at step 318 at each frequency level is used to determine the registration of frequency component image data for corresponding portions of image pairs at that frequency level).

Regarding claims 8 and 26, Xiong discloses said generation of frequency component image data for different spatial frequencies for an image are generated from said corresponding portions of projections of frequency component image data in different ways for different spatial frequencies (i.e. the calculations required for each level of the Gaussian pyramid are different due to the varying sizes of the images at each level).

Regarding claims 12 and 30, Xiong discloses a method/apparatus of generating image data representative of an image of a subject from a predefined viewpoint (figure 2), the method of comprising the steps of:

generating frequency component image data representative of image information of a plurality of different spatial frequencies of an image of a subject from said predefined view in accordance with a method of claim 1 (see the explanation for claim 1 above); and

generating image data representative said image of said subject utilising said frequency component image data (i.e. the frequency component data is utilized, inter alia, to generate representative image data of the subject, such as shown in figure 1b).

Regarding claims 13 and 31, Xiong discloses said generation of image data comprises for each portion of said image determining the sum of frequency component image data for said different spatial frequencies (i.e. the Gaussian pyramid calculations require summing frequency component information at each level).

Regarding claims 14 and 32, Xiong discloses the step of outputting said generated image data (e.g. to an image monitor in figure 2).

Regarding claim 15, Xiong discloses a method of generating texture map data for texture rendering a model of a subject comprising the steps of:

generating a plurality of images of a subject from a plurality of predefined views in accordance with the method of claim 12 (see the explanation for claim 12).

Regarding claim 16, Xiong discloses said plurality of predefined views comprise views of a subject from viewpoints indicative of views from the surface of a cuboid bounding said subject (i.e. the plurality of predefined views comprise at least two views indicative of a cuboid – e.g. two of the rectilinear images from figure 1a that lie in the same plane are indicative of one side of a cuboid).

Regarding claim 36, Xiong discloses a recording medium for storing computer implementable process steps for generating within a programmable computer, apparatus in accordance with claim 19 (i.e. a computer system, figure 2).

Regarding claim 37, Xiong discloses a recording medium for storing computer implementable process steps for causing a programmable computer to perform a method in accordance with claim 1 (i.e. a computer system, figure 2).

Regarding claim 38, Xiong discloses recording medium in accordance with claim 37 comprising a computer disc (i.e. computer disc utilized in figure 2).

Regarding claim 39, Xiong discloses a computer disc in accordance with claim 38 comprising an optical, magneto-optical or magnetic disc (i.e. the computer includes a hard disk).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,434,265 by Xiong et al. ("Xiong").

Regarding claim 40, Xiong discloses recording medium in accordance with claim 37, but does not expressly disclose that it comprises an electrical signal transferred via the Internet. However, at the time the invention was made, receiving electrical signals over the Internet comprising image data or the like was conventional, and the advantages of utilizing the Internet to receive electrical signals was obvious to those skilled in the art. Official notice taken.

Allowable Subject Matter

8. Claims 4-6, 9-11, 17, 18, 22-24, 27-29, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 4 and 22, Xiong is silent to determining the relative positions of the viewpoints, as claimed, and then determining model data from the determined positions, and then using the position data and the model data to determine the projections, as claimed. Claims 5, 6, 23, and 24 depend from claims 4 and 22.

Art Unit: 2623

Regarding claims 9 and 27, Xiong is silent to determining visibility data, as claimed, associating the projections with the visibility data, and then using the associated visibility data to determine frequency component information, as claimed. Claims 10,11, 28, and 29 depend from claims 9 and 27.

Regarding claims 17 and 33, Xiong is silent to determining a projection of a 3-D model and then texture rendering the model utilizing texture map data, as claimed. Claim 18 depends from claim 17.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,414,803 by Malzbender; and

U.S. Patent 6,271,847 by Shum et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

Art Unit: 2623

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CML
Group Art Unit 2627
17 October 2005



VIKKRAM BALI
PRIMARY EXAMINER